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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,141	10/19/2001	Hiroshi Hata	211141US2PCT	6897

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EXAMINER

BOTTORFF, CHRISTOPHER

ART UNIT

PAPER NUMBER

3618

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,141

Applicant(s)

HATA ET AL

Examiner

Christopher Bottorff

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-18 and 20-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-26, 29 is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-18, 27, 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

The amendment filed July 24, 2003 has been entered. Claim 12 is canceled.
Claim 29 is added. Claims 1-14, 16-18, and 20-29 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6-8, 12-14, 16-18, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo JP 09-046821 (note that US 5,722,502 provides an English language explanation of this technology developed by Kubo).

Kubo discloses a hybrid vehicle with a power output apparatus having an engine 28 and two motors 10 and 24, wherein power output is provided through a drive shaft. See Figure 1. A changeover means 36 and 40 changes over a connection state of the engine and motors between a parallel connection mode and a series connection mode. See the English abstract. One of the two motors 10 functions as a power regulation unit that has at least two rotating shafts and is capable of regulating magnitude of power transmitted between the at least two rotating shafts through transmission of electric power. The power regulation unit 10 and the other motor 24 are arranged in series between an output shaft of the engine and the drive shaft. The changeover means includes a connection mechanism 36 that connects and disconnects the power

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regulation unit with and from the other motor, and a constraint mechanism 40 that constrains one of the at least two rotating shafts in the power regulation unit and thereby allows conversion between electric power and mechanical power in the power regulation unit in a released position of the connection mechanism. In particular, the constraint mechanism 40 constrains rotation of the specific shaft 38c that is linked with the connection mechanism 36.

Detection means (22, 32, 34, 42, 44, shift lever, etc.) are capable of detect a predetermined parameter relating to a driving state of the hybrid vehicle, including determining: whether or not a current gearshift position is at a reverse position, whether or not the hybrid vehicle is at a stop, whether or not the hybrid vehicle is in a specific driving state that requires monitoring of the engine, and whether or not the hybrid vehicle is in a certain driving state that requires a stop of the engine. See Figures 3-7. A control means 20 controls the changeover means to change over the connection state, based on a result of the detection. Based upon the functional requirements of the control means, the control means inherently includes a storage unit that stores a mapping of each range of the predetermined parameter to the connection state having a high driving efficiency. Also, the control means inherently includes a unit that refers to the storage unit based on the result of the detection by the detection means and implements the changeover of the connection state. The control means is capable of selecting the series connection mode when it is determined: that the current gearshift position is at the reverse position, that the hybrid vehicle is at a stop, when the hybrid

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vehicle is in the specific driving state, or that the hybrid vehicle is in the certain driving range. See Figures 3-7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Varela, Jr. US 5,172,784.

Kubo does not disclose that the power regulation unit includes a pair-rotor motor having two rotors that are rotatable relative to each other. However, Varela, Jr. teaches the old and well known practice of providing a power regulation unit in a hybrid vehicle with a pair-rotor motor having two rotors that are rotatable relative to each other. See column 8, lines 18-22 and 41-43, and column 11, lines 33-36. From the teachings of Varela, Jr., providing the power regulation unit of Kubo with a pair-rotor motor having two rotors that are rotatable relative to each other would have been obvious to one of ordinary skill in the art at the time the invention was made. This would provide the unit with automatic electronic limited slip differential action.

Claims 4, 5, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Yamaguchi US 5,806,617.

Although Kubo discloses a gear unit 38 having three rotating shafts 38a, 38b, 38c, a motor generator 24 linked with one of the three shafts 38b, and the constraint mechanism linking 40 the residual two shafts of the gear unit (see Figure 1), Kubo does not disclose that the gear unit is a planetary gear unit. However, Yamaguchi teaches the old and well known use of planetary gear units 24 with hybrid vehicles. See Figure 8. From the teachings of Yamaguchi, providing the gear unit of Kubo as a planetary gear unit would have been obvious to one of ordinary skill in the art at the time the invention was made. This would allow torque to be transferred efficiently between the shafts. Moreover, in regard to claim 19, despite this modification the detection means of Kubo would be capable of detecting a required torque to be output from the drive shaft, and the control means would be capable of making both the connection mechanism and the constraint mechanism in coupled positions when the required torque is not less than a preset value.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo JP 09-046821 in view of Moroto et al. JP 07-107617.

Kubo does not disclose route information input means or that the control means carries out the changeover by taking into account the route information. However, Moroto et al. teach the old and well known practice of providing a hybrid vehicle with route information input means that inputs route information relating to a driving state of the hybrid vehicle, with regard to a preset driving route of the hybrid vehicle, and enabling a control means to carry out a system changeover by taking into account the

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route information. See the English abstract. From the teachings of Moroto et al., providing the hybrid vehicle of Kubo with a route information input means, such that the control means carries out the changeover by taking into account the route information, would have been obvious to one of ordinary skill in the art at the time the invention was made. This would allow the vehicle to minimize exhaust gas emissions in designated areas.

Allowable Subject Matter

Claims 20-26 and 29 are allowed. Claim 20 defines a resonance detection means and a resonance suppression means. These features, in combination with the further limitations of the claims, are not taught by the prior art and distinguish the claimed invention over the prior art.

Response to Arguments

Applicant's arguments filed July 24, 2003 have been fully considered but they are not persuasive.

In regard to lines 4-15 of column 13 of Kubo, the examiner notes that whether or not the switch to SHV mode occurs as a result of positioning the shift lever in "R" (reverse) is irrelevant. The rejected claims only require that the switch to SHV mode and shift to reverse occur during the same time period, not as a result of one another. The claims state that the change to the series connection mode must occur *when* there is an instruction or detection of a reverse power state, not *as a result of* the reverse

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power state instruction or detection. (emphasis added). Lines 11-15 of column 13 of Kubo indicate that the switch to SHV mode occurs at the same time as the shift lever is positioned in R, which anticipates the claims.

Furthermore, lines 11-15 of column 13 also indicate that the switch to SHV mode occurs as a result of positioning the shift lever in reverse. On lines 6-9 of page 14 of the remarks, Applicants state that the vehicle *is to be* operated in a conventional ICE mode and that the switch to the SHV mode only occurs when a separate command, such as a deceleration command, is provided. (emphasis added). However, this is not accurate. Lines 11-15 of column 13 state that in the event the shift lever is positioned in reverse, the operating mode *can be* a conventional ICE mode or *may be* an SHV mode. That is, the mode of operation will be either ICE mode or SHV mode. Thus, lines 11-15 of column 13 do not suggest that the vehicle is to be operated in the ICE mode and that the switch to SHV mode only occurs if a separate request, like deceleration, is made.

In fact, Kubo does not offer any suggestion that additional input is necessary to cause the switch to SHV mode when the shift lever is in the reverse position. Rather lines 11-15 of column 13 establish a direct relationship between positioning the lever in the reverse position and initiating the switch to SHV mode, which strongly suggests that the switch to SHV mode occurs as a result of positioning the lever in the reverse position. Although the switch to SHV mode in lines 11-15 of Kubo is temporary, this does not suggest that a separate request is needed to initiate the switch. The switch to the SHV mode is temporary to the same extent as the shift to reverse. Thus, the switch to SHV mode occurs as a result of positioning the shift lever in reverse.

The examiner recognizes that the switch to SHV mode in lines 11-15 of column 13 of Kubo occurs so that regeneration is used with priority and the change to the series connection in the claimed invention occurs for a different reason. However, the reason why the switch occurs is irrelevant since the switch does occur and it occurs under the circumstances required by the claims. The claims do not exclude a switch to the series connection mode for the reason of using regeneration with priority.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

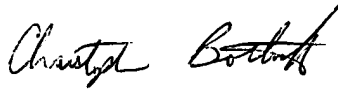
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Bottorff whose telephone number is (703) 308-2183. The examiner can normally be reached on Mon.-Fri. 7:30 a.m. - 4:00 p.m..


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Johnson can be reached on (703) 308-0885. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



Christopher Bottorff


SUPERVISOR
TECHNOLOGY CENTER 3618
8/14/03